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ABSTRACT

This study examined the impacts of student gender, academic achievement (cumulative grade point average), familial influence, and academic aptitude/characteristics on intentional persistence at Grambling State University (Louisiana). The sample consisted of 219 students (188 developmental and 31 nondevelopmental) who had persisted beyond the freshman and developmental curricula at Grambling. Students completed the Institution-Instructor-Student Inventory Survey. Results showed that students' entry-level characteristics were influenced by many factors, including age, gender, choice of major, dependent children, and institutional involvement. Students' entry-level characteristics and the familial influence on students' decision-making were interrelated and both had a significantly direct effect on students' ability/style and aptitude, which in turn had a direct impact on students' co-integration and eventual persistence. High educational aspiration of students and their satisfaction with the institution affected their intent to persist and co-integration. The survey is appended. (Contains 40 references.) (Author/DB)

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Students' Intentional Persistence As A Web of Causal Factors: A Preliminary Study I

Abstract

This preliminary study considered the impacts of students' gender, academic achievement (cumulative GPA), familial influence, and academic aptitude/characteristics on intentional persistence. The sample consisted of 219 (97 males & 122 females and 188 developmental & 31 non-developmental) post-developmental volunteer undergraduates who had persisted beyond the freshmen and developmental curricula at Grambling State University.

Results showed that students' entry-level characteristics were influenced by many factors including age, gender, choice of major, dependent children, and institutional involvement; students' entry-level characteristics and familial influence on students' decision-making were interrelated and both have significant direct effects on students' ability/style and aptitude, which in turn, have direct impacts on students' co-integration and eventual persistence; and high educational aspiration of the students and their satisfaction with the parent institution affected their intent to persist and co-integration. The consequences of these causal factors were discussed.

Students' Intentional Persistence As A Web of Causal Factors: A Preliminary Study I

Introduction

Studies have been conducted on the general and specific factors that contribute to students' retention in higher education. The contentions that guided these investigations were that instructors' attitudes and characteristics, classroom management, and the application of instructional design principles would improve students' academic performance, reduce attrition, increase retention, and prolong persistence. These studies found that students' departure behaviors were 'in situ' institutional (Ikegulu & Barham, 1997; Hood, 1991; Pascarella, 1980, 1982; Pascarella & Terenzini, 1980, 1983, 1985, 1991; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996) and depended on the students' demography and familial involvement (Keith, Reimers, Ferhnmann, Pottebaum, & Aubey, 1986; Nora & Cabrera, 1996; Terenzini, et al., 1996).

Most attrition-retention (persistence) studies used crude estimates (pass rates, transcript analyses, and frequency counts) as conclusive evidence of persistence in college (Hashway, Jackson, & Rogers, 1994; Hashway, et al., 1992). Others used dichotomous categorization to ascertain persistence. There are a handful of studies on attrition and

retention in Louisiana school systems. Most of these studies were institutional research reports (Barham, 1992; Barham & Ogunyemi, 1992, 1994; Ferguson, 1991; Ikegulu, 1996) and focused on elementary and secondary school systems. The present study considered the educationally plausible factors that impact post-developmental students' withdrawal decisions in public postsecondary institution.

As professional and legislative efforts have evolved to assimilate greater numbers of nontraditional (e.g., academically, disabled, and economically disadvantaged) students into postsecondary institutions, insufficient attention has been directed to the difficulties many of these students experience in attempting to complete their educational training. There is a need for educators to better understand the problems and challenges these students encounter during their tenure in higher education.

Johnson's (1991) research identified four sets of independent variables including intrinsic and extrinsic motivation factors with subsets of variables under each group. The first set or variables in the model contained "background characteristics" related to students' demographic, educational, social, and family history, The second set, "social/psychological integration," included students' goal commitments; perceptions about the utility of their educational training programs for achieving future employment goals; affective measures of students' alienation, self-esteem, and stress; and factors that focus on the nature of interpersonal

relationships with peers and instructors. The interactions of theses variables produce psychological outcomes that are measured by the "student satisfaction" construct. The third set of variables described students' "academic and/or institutional integration." Academic integration variables included grade performance and GPA as well as academic, social, and physical capacities of the individual; and such conditions/influences within institutions as program policies, instructors, student support services, course or class scheduling, and training programs that affect students' institutional integration. The interactions of academic and institutional integration variables produce "student satisfaction" outcomes during participation in vocational training programs. Finally, environmentally based "mediating factors" are postulated to have significant and direct effects on students' dropout and retention decisions. These variables include students' sources of financial support, hours of outside employment, family and peer encouragement, peer relationships, family responsibilities, and other community service involvements. These environmental variables influence the degree of social/psychological integration and academic/institutional integration experienced by students.

The objectives of this study were: (1) To solidify and link the causal factors in the proposed Dissertation study, "Factors Relating to Attrition and Persistence for Post-Developmental Learners in Northern Louisiana." (2) To investigate the influence of students' academic performance, perceived academic and intellectual development, socio-academic integration, and

affiliation on students' intentional persistence behaviors. Specifically, this study estimated the parameters of the Post-Developmental Students' Intentional Persistence Model I.

Specific Aims

1. To specify a model that took into account the impacts of the students' background (entry-level characteristics, students' ability and style, and familial influences on students' decision-making), institutional environmental system, and institutional instructional environmental system on perceived instructors' effective use of instructional systems approach/principles in classrooms, co-integration, and intentional persistence behavior of post-developmental college students in the sample.
2. To use a modified questionnaire obtained from the reviewed literatures on attrition-retention studies to help explain the outcome and the extent of co-integration in #1 above.
3. To determine how the proposed model in specific aim #1 differentially explained the intentional persistence behaviors in the sample.

Background and Significance

The five dominant models -- Students' Involvement Model (Astin, 1970; Pascarella & Terenzini, 1991); College Drop-out Model (Spady, 1970); Drop-out Syndrome Model (Bean, 1980/81, 1985); General Causal Model (Pascarella, 1985); and Socialization Model (Weidman, 1989) -- of students' attrition and retention share some

factors including the entry-level characteristics at the time of initial entry, academic, and psycho-social stressors students encounter while in school.

Academic and social integrations are concepts that describe a student's ability to withstand institutional environmental stressors. A student who is both academically and socially integrated in an institution is said to be co-integrated; otherwise, the student is considered a malintegrated student (Tinto, 1975, 1988, 1997).

Johnson (1991) conducted an extensive review of the research and related literature on students' persistence and found that major contributions to the understanding of student attrition and retention in postsecondary education evolved from two-year and four year institutions. However, generalizing these findings to a four-year institution is not without major problems, since adult learners differ not only in their goals, background, characteristics, and achievement levels, but also in their education orientation. Bean and Metzner (1985) and Johnson (1991) argued that differences in socio-demographics, education orientation, and program length coupled with the fact that most adults participating in postsecondary educational training are nontraditional, establishes the need for the present investigation.

Keith, Reimers, Fehrmann, Pottembaum, and Aubey's (1986) direct and indirect effects of parental involvement and T. V. viewing time on high school students' academic achievement used the data on 28,051 high school students from the 1980 High

School and Beyond Longitudinal Study of the National Center for Education Statistics. A sub-sample of 1066 students was selected and the institutions were selected based on a probability proportional to size of the estimated enrollment within each school. The generated data set was factor analyzed and recoded to formulate the Conceptual Model of High School Achievement. Results of the multiple linear regression analysis indicated that ethnicity, students' ability, family background, and gender all have significant direct and indirect effects on students' achievement predicated upon time spent on homework and leisure T.V. viewing; and that parental involvement had no meaningful effects on students' academic achievement. Further analysis included MANOVA. The MANOVA results were protective for males and high-ability students over females and low-ability students. Young males had higher mean achievement scores than females (p. 376). High-ability students spent more time studying than low-ability students regardless of gender and ethnicity; non-White students spent more time on homework than did White students; and parental involvement had a significant effect on homework and a marginal effect on T.V. time.

Theoretical and Conceptual Frameworks

Four educational constructs consistently appear in the college attrition-retention models: entry-level characteristics, academic

ability/aptitude, familial influence/encouragement, and students' co-integrability. Together, these constructs describe the attrition-retention (persistence) patterns in higher education. These constructs are as defined in Tinto's (1975) and Pascarella, Duby, and Iverson's (1983) models; and tested in Bean and Metzner's (1985), Johnson's (1991) and Okun, Weir, Richards, and Benin's (1990) studies. Okun, et al used credit load as a moderator of the intent-turnover relation among community college students.

Research findings have consistently linked entry-level characteristics and institutional environments to students' within institutional co-integrability. Students' entry-level characteristics can be clustered into two categories: (1) Students' ability/aptitude and style, which includes academic aptitude (ACT/SAT scores) and prior academic performance (high school GPA, rank, number of hours of math and English taken in high school, and the type of curricula pursued in high school); and (2) students' characteristics, which includes individual characteristics (age, gender, personality, and ethnicity) and background characteristics (family support variables such as family size, education, income, and occupation),place of abode or domiciliary, distance from school to home, state of legal residence, and number of friends attending the same school (Astin, 1970; Bean, 1980; Clark, 1983; Keith, et al., 1986; Nora & Cabrera, 1996; Pascarella, 1985; Spady, 1970; Tinto, 1975; Terenzini, et al., 1996).

The strongest risk stressors for the constructs entry-level characteristics and familial influence are family obligation,

gender, on- and off-campus employment, age, number of dependent children, financial aid, degree aspiration, number and hours of school and community activities, membership in the same social or academic organizations with other students, attendance of the institution's orientation, number and hours of high school mathematics and English taken, and scores on the ACT/SAT composite (Ikegulu, 1996, Keith, et al., 1986; Nora & Cabrera, 1996; Tinto, 1988, 1997). The strongest construct influencing college students' persistence may be students' co-integration within the institutional environment. Students' formal and informal institutional experiences involve faculty, staff, and peers. Positive experiences create a sense of belonging in, affiliation with, or integration within the institutional environment and often lead to retention (Nora & Cabrera, 1996). Negative experiences create a sense of being different and alienation from, or malintegration within the environment. These negative experiences and lack of incorporation often lead to withdrawal (Keith, et al., 1986; Terenzini, et al., 1996).

Institutional environments are characterized by their types (residential or non-residential) and predominant race of the student population (PBCUs and PWUCs). Within these institutions are the staff and faculty members whose influence significantly affect the students' decisions to remain or leave the institution (Tinto, 1975, 1988). This does not imply that the institutions and their staff members are the only influential factors in students' withdrawal decision. The students' academic abilities and study

habits also contribute to their withdrawal decisions. The extent of influence family members have on students' persistence have not been fully studied in higher education.

It has been shown (e.g., Ikegulu, 1996; Keith, et al., 1986; Nora & Cabrera, 1996) that time spent watching T.V. is correlated with ability; that parental influence has both direct and indirect effect on students' academic achievement; and that family background has both direct and indirect effects on students' academic achievement through homework, students' ability and style (study habits), T.V. time, and parental influence.

Various models relating to persistence of college students have been tested (e.g., Bean & Metzner, 1985; Johnson, 1991; Keith, et al., 1986; Nora & Cabrera, 1996; Spady, 1970; Terenzini, et al., 1996; Tinto, 1975). The conceptual framework for the proposed model was influenced by these models. These models are generally discussed within the frameworks of two interrelated theories: the person-environmental fit theory and the stages of student departure theory.

The person-environmental fit theory evaluates the degree of fit between an individual student and the institution. This theory posits that students come to postsecondary institutions with a variety of traits (e.g., gender, family background, cultural norms, financial and personal needs, pre-postsecondary characteristics, different academic aptitudes, age, and family obligations). These background or entry-level characteristics lead to a student's initial commitment predicated upon his or her academic ability,

study habits, and level of motivation (Clark, 1983). These initial commitments, together with entry-level characteristics and the student's academic aptitude collectively influence his or her decision to withdraw or remain within an institution provided that he/she feels or perceives a sense of belonging (fit) or alienation (lack of fit) within the institution. The perceived feeling of alienation perpetuates the student's degree of co-integration (or malintegration thereof) predicated upon his or her ability to interact (formally and informally) with institutional personnel and other students. Students' commitments to the institution, the institution's aggregate commitment to the student, and familial influence on the students' decision-making ability are collectively affecting their persistence behavior (Bean & Metzner, 1975; Hood, 1991; Johnson, 1991; Pascarella, 1985; Tinto, 1975, 1997).

The stages of student's departure theory postulates that institutional environmental stressors on the student are the cumulative results of a set of interrelated experiences sustained over an extended period of time; and that the process of students' departures are longitudinal and depend on their levels of motivation and involvement within the institution. This theory presumes that as a student progresses through these stages -- initial stage with entry-level characteristics and initial goals and aspirations, to the median stage with refined study habits and personal and institutional goals and commitments, to the terminal stage with realized expectations -- the student's persistence behavior is affected through sustained endurance and improved

levels of familial support and family obligations as well as hours of institutional and community activities and involvement as mediated by instructors' attitudes and characteristics (Bean & Metzner, 1985; Johnson, 1991; Nora & Cabrera, 1996; Pascarella, et al., 1983; Pascarella, et al., 1996; Tinto, 1997).

Consistent with the person-environmental fit and stages of students' departure theories is the 'Instructional Environment and Students' Intentional Persistence Theory' (Tinto, 1997). This theory posits that institutional instructional environments can be perceived as instructional communities where a host of curricula offerings mediate the persistence behaviors of college students; and that the effective use of instructional systems design principles and approaches by institutional faculty significantly impacts students'
persistence as mediated by students' and instructors' characteristics, classroom instructional experiences, and students' expected course grades. The theory presumes that an instructional environment propagates from institutional environments, and that this propagation manifests itself through the effective use of instructional systems design principles by the faculty; which in turn reduces the feeling of alienation and malintegration; and thereby, fosters students' co-integrability. That is, institutions with academic commitments to the students have the tendency to enforce technological know-how and technology-driven curricula that tend to compensate for socio-academic integration; and thus, enhance co-integration by improving student-faculty and peer-group

interactions.

The contentions underlying this theory are that: (1) Students' pre-existing characteristics (age, gender, marital status, prior knowledge base, course/program prerequisites, and learning styles) and instructors' characteristics (age, gender, instructional experience, rank, average semester course loads, longevity, grading styles, and teaching methods) significantly affect instructors' teaching effectiveness as well as students' learning outcomes, grades, and willingness to drop out of college or remain to complete a degree program, a course, or graduate. (2) Better expected course grades reflect better students' learning; and effective planning and design of instructional episodes foster better students' understanding of the instructional materials, as well as aid in anchored knowledge. These in turn enhance students' institutional persistence by minimizing their feeling of alienation (lack-of-fit) and malintegration (Hood, 1991; Tinto, 1997).

Methodology and Analytical Procedures

Research Design

A causal comparative design was used. This design is referred to as ex-post facto or causal-comparative design (Crowl, 1996; Fraenkel & Wallen, 1996; Pedhazur & Schmelkin, 1991). Although interests were on the effects of the exogenous latent structures on the endogenous dependent variables and their resultant direct and indirect effects, actual investigations were on pre-existing and intact groups. That is, the study consisted of students who already

exhibited different risk indicators of interest.

Research Hypotheses

The study included six theoretical constructs (See Table 1): two exogenous latent variables (students' entry-level characteristics and familial influence on students' decision-making) and four endogenous latent variables (students' ability/style, aptitude, co-integration, and intentional persistence). The pattern of causal inquiries that were investigated are as follows:

1. Students' entry-level characteristics and familial influence on students' decision-making are interrelated; and both have direct effects on students' ability/style and aptitude.
2. Students' ability/style and aptitude are both interrelated; and both have direct effects on students' co-integration and intentional persistence.
3. Students' co-integration is a mediating factor between students' intentional persistence and students' ability/style and aptitude; and is also antecedent to students' intentional persistence.

Population and Sampling

The participants for this study were post-developmental undergraduate students who: (1) voluntarily agreed to participate in the study by signing the Student's Consent Form Agreement and, filling out the Institution-Instructor-Student Inventory (IISI) survey, and (2) had persisted beyond the freshmen and developmental curricula at Grambling State University (GSU).

Data were collected within the first three week of instruction

Table 1

Latent Structures and Indicators

Latent Structures	Indicators/Composites of Items
Students' Entry-Level Characteristics [Exogenous]	Age, Ethnicity, Gender, Number and Hours of High School Math and English taken, and High School GPA.
Familia Influence on Students' Decision-Making [Exogenous]	Family background, Family size, income, and Composites formed by: Socioeconomic status (Amount of financial Aid award, Father's level of education, and Mother's level of education) and Family encouragement/ support (24 - 27).
Students' Ability/Style [Endogenous]	Composites formed by: Students' Activities (Weekly Hours of school activities, Number of School Activities, Weekly Hours of School Activities, Weekly hours of community Activities, and Number of Community Activities) and Student' Style (Weekly Hours of Study Time, T. V. Time, Choice of Major, and Degree Aspiration).
Students' Aptitude [Endogenous]	College Cumulative GPA, ACT Composite and Component Scores, and Composite formed by: Students' Characteristics (Number of Dependent Children, Off-campus Employment, Participation in Honor's Program, On-campus Employment, and Attended Institution's Orientation).
Co-integration (COINTG) [Endogenous]	Composites formed by: Social Integration (35 - 39), Academic Integration (57 - 63) and Need for Affiliation (53 - 56). Co-integration is further grouped:- 1 = student is co-integrated 2 = student is not co-integrated 3 = student is unaffiliated but is academically or socially integrated
Intentional Persistence [Endogenous]	Likelihood to transfer and/or re-enroll in the institution next term (Intent to persist) (64 - 71)

during the Spring semester 1997. A student was selected for inclusion into the study if: (1) He or she was initially admitted into GSU during the Fall 1995; (2) had taken at least one developmental education course in mathematics, English, reading, and/or study skills; and (3) was enrolled during that semester as a full or a part time student. Students' high school and college cumulative GPAs, number and hours of high school mathematics and English, and the ACT

composites and components were obtained from the institution's Registrar. Students' names and social security numbers were deleted from all study data banks to insure confidentiality. That is, participants remained anonymous through the use of coded identification numbers which were linked to the list of names on the questionnaires. Participants were appraised of their non-punitive withdrawal and/or non-compliance to follow-up studies.

Instrumentation

The instrument, "Institution-Instructor-Student Inventory Survey" took the students approximately 20 minutes to complete. The first page (See Appendix A) was a letter of explanation and consent from the students. This letter explained the purpose of the research, assured complete confidentiality, and requested consent to use the data for the research project. Each student had to sign the consent agreement before any information was used in the study. The removal of the consent form from the questionnaire served as a method to insure student confidentiality.

The first three pages of the questionnaire (See Appendix B)

listed 19 items designed to solicit information about the students' background, including gender, ethnicity, date of birth, degree aspiration, residential status, financial aid, number of dependent children, and other academic decisions (participation in academic and social activities). Item 9 asked the students to indicate their degree aspiration on a six-point scale (none to Pd.D. and beyond). Item 10 requested students' information about the number of dependent children (none to four or more). Items 11 and 13 asked the student to indicate on a five point scale (none to seven or more) the number school and community related activities they are involved in. Items 12 and 14 asked the student to indicate on a four point scale (none to nine or more), the approximate number of hours per week he or she spent participating in activities associated with social life at the institution (e.g., intramural sports, band, fraternities, social clubs, etc.). Items 15 to 17 and 19 asked the student to indicate on a four point scale (none to 9 or more), the approximate number of hours per week he or she spent outside the classroom watching TV, studying, and working (on-campus or off-campus). Item 18 asked the student to indicate the amount of financial aid he or she received annually using a seven point scale ranging from none to $12,500 and above.

Items 20 and 21 asked students to indicate the highest level of education achieved by each parent on a five-point scale (some

high school to graduate/professional school). The aggregate of items 20 and 21 will be used as family education (FAMEDUC). Items 22 and 23 asked students to provide information about their family size (number of persons in familial household) and background (single and/or two family system) on a five-point scale. The composite obtained from items 9, 10, 15, and 17, together with the students' composite ACT/SAT scores will be used as a measure of student/ability style (SAS). The composite obtained from the financial aid and familial support variables (items 18 & 20-23) will be used as a measure of socioeconomic status (SES). SES together with the composite measure, FAMENC (items 24-27), will form the FAMIN component (Refer to figure 5). The last pages of the questionnaire listed 81 items to be answered on a five-point Likert (1, Almost always true to 5, Almost never true) scale and collected information regarding curricula offerings and student co-integration into the institutional environment.

These items were a combination of the "Institutional Integration Scale (IIS)," which measured academic and social integration of students into the institutional environment (Pascarella & Terenzini, 1980); and Branch's (1994) "Teacher Planning Inventory Survey (TPIS)," which measured the common instructional design practices instructors employed in their classrooms. The IIS was developed (based on the elements of Tinto's

conceptual model) to ascertain the multidimensional measure of co-integration and the significant discrimination between persisters and voluntary dropouts.

Factor analysis of the original list of IIS items produced five factors with eigenvalues ranging from 6.14 to 1.67 and accounted for 44.5 percent of the variance (Pascarella & Terenzini, 1980). The intercorrelations among these five factors ranged from 0.01 to 0.33 with a median correlation of 0.23. This is an indication that the factors were independent of one another. Pascarella and Terenzini then used these factors to form five sub-scales. These sub-scales (with their coefficient alpha) are as follows: (1) peer-group interactions, a composite consisting of seven questions with a reported (alpha = 0.84); (2) informal interactions with faculty, a composite consisting of five questions with a reported (alpha = 0.83); (3) faculty concern for student development and teaching, a composite consisting of five questions (alpha = 0.82); (4) academic and intellectual development, a composite consisting of seven questions (alpha = 0.74); and (5) institutional and goal commitment, a composite consisting of six questions with a reported (alpha = 0.71). "Scores on the five scales alone correctly identified 78.9% of the cross-validation persisters and 75.8% of the students in the cross-validation sample who eventually dropped out from the institution" (Pascarella &

Terenzini, 1980, p. 71).

Branch's (1994) Teacher Planning Inventory Survey, measured the common instructional design practices instructors employed. This instrument used construct validation to ascertain the reliability of its scales.

Variable Identification and Definition of Terms

The collected data (see appendix C) were operationalized as follows:

AGE Student's age (determined as AGE = 9702 - DOB)

SEX Student's gender (1 = male, 2 = female)

RSTAT Student's residential status (on- or off-campus)

CLASS Student's classification (Fr, Sp, Jr, or Sr)

RACE Student's ethnicity (1 = White, 2 = Black, 3 = Hispanics, or 4 = Others)

Students' Entry-Level Characteristics An exogenous latent variable that impacts students' ability/study habits and other prior academic risk stressors. This variable is characterized by the individual student's characteristics and personality traits (age, gender, and ethnicity), as well as their number and hours of high school mathematics and English and high school GPA.

Familial Influence on Students' Decision-Making An exogenous latent variable that impacts students' familial support as well as their home environmental stressors. This construct taps on the parental

influence on students' decision-making abilities and includes such indicators as students' financial aid awards; family size, income, background, and level of education; and other family support indicators.

Students' Ability/Style An endogenous variable that characterizes students' socio-academic abilities as they relate to their on- and off-campus activities (weekly hours of school and community activities, number of School and community activities and students' academic style (study time, T. V. Time, choice of major, and degree aspiration).

Students' Aptitude An endogenous latent construct that comprised the students' cognitive abilities as measured their college GPA, ACT composite and component scores, and other non-cognitive factors such as number of dependent children, on- and off-campus employment, participation in honor's program, and attendance of the institution's orientation.

Co-integration

An endogenous latent variable that determines the extent of co-integration or malintegration within an institutional climate. People co-exist in an community when they live together (Tinto, 1988). A student can be integrated into an institutional environment if he or she is either academically integrated or socially incorporated into that environment (Astin, 1970, 1975,

1990; Beam, 1981/85 Tinto, 1975/88; Pascarella, et. al., 1983; Terenzini, et. al., 1996). Students who are academically integrated have the 'marginal propensity' to persist more than those who are socially integrated (Tinto, 1988; Terenzini, et. al., 1996). A co-integrated student is the student who is both academically and socially integrated into an institutional environment. A malintegrated student is one who is not co-integrated. Hence, co-integration is the 'propensity' to withstand the forces of attrition by socially and academically co-existing within an institutional environment.

Academic Integration The academic climate or culture in an institutional setting. This is a multi-dimensional measure of the ability of the student to withstand the academic rigors and competition within the academic system. It is characterized by the student's academic performance (student's ability to meet the requirements and curricula demands) and intellectual or personality development (student's ability to identify with and relate to the norms and requirements of the academic system).

Social Integration The social climate or culture within an institution. This is a multi-dimensional measure of social interactions and the degree of congruency between a student and the social environment within his or her parent institution characterized by social "fitness" or "unfitness". Social

integration is characterized by the formal and informal interactions between the student and the "significant others" (faculty, staff, administrators, students, and peers) within the institutional system in a supportive and affiliative manner.

Affiliation This is the degree of congruency perceived as a "social fit" (an affiliated student) or a "lack of social fit" (an unaffiliated student). It is characterized by the factorially derived sub-scales of the Interpersonal Orientation Scale (Hill, 1987).

Intentional Persistence

An endogenous latent variable characterized by: students' likelihoods to transfer to another institution, graduate from the current institution, or remain in the institution and complete a degree program. This is the proportion of students who are still in school, and are still in pursuit of their academic goals. Persistence is the result of students' experiences while attending college, and not what happened before. Persistence is a measure of the degree of co-integration.

Retention Proportion of students who were initially admitted and enrolled in their parent institutions or transferred to another institution, and are still in pursuit of their academic goals. These are the students with positive identification with the institution and are most likely to exhibit the propensity for

intentional persistence.

Attrition Attrition is the lack of compatibility between the student and the institutional environment. Attrition is the proportion of students who have the least need for affiliation and exhibit the highest propensity for unintentional persistence.

Students who are co-integrated are affiliated and those who are malintegrated are not affiliated. A socially or academically integrated student may or may not be affiliated. Therefore, co-integration as used in this study is coded 1, if the student is both academically and socially integrated (institutionalized); 2, if the student is: (a) affiliated but academically unintegrated, or (b) affiliated but socially unintegrated; and 3, if the student is neither academically nor socially integrated (uninstitutionalized).

Results and Discussion

Summary measures were used to describe the sample characteristics. The majority of these students were not honors students and did not attend the institution's orientation. The sample consisted of 204 Non-Hispanics, 46 (21%) Caucasian Americans and 158 (72%) African Americans; 3 (1.4%) Hispanics; and 12 (5.6%) others including 2 (0.9%) Asian Americans, 3 (1.4%) Native Americans, and 7 (3.3%) foreign students). The gender distribution were 97 (44%) males and 122 (56%) females. A marginal proportion

(758, 50.5%) of these students worked at least five hours per week on-campus.

About 80 (36.5%) of the sample considered themselves first-generation college students; reported that at least one of their parents (77, 35.2%) or their siblings (62, 28.3%) graduated from college; (143, 65.3%) reported that their parents' average annual income exceeded $20,000; 79 (36.1%) of the sample lived on-campus and 140 (63.9%) lived off-campus. With regards to honor's program and choice of major, 168 (76.7%) were honors students and 200 (91.3%) had declared their majors.

The majority of these students had at least three people residing in their households (199, 90.7%); came from a two-family (natural or adopted parents) system (144, 65.8%); attended the parent institution's orientation (132, 60.3%); had no dependent children (175, 79.9%); spent at least 20 hours per week studying (201, 91.8%); were involved in at least one school (122, 55.7%) and community (133, 60.7%) related activities; spent at least ten hours per week on off-campus employment (129, 58.9%), on school related activities (136, 62.1%), and on community related activities (147, 67.1%); and received at least $1,000 in financial aid annually (178, 81.3%). Table 2 is a summary measure of the academic indicators.

Table 2

Summary Measures for the Academically Related Variables

Indicator Variables	Minimum	Maximum	Mean	(SD)
Students' Age	17	47	21.89	4.53
Number of high school Math	1	14	3.90	1.52
Number of high school English	1	12	4.04	1.38
Hours of high school Math	1	30	11.00	4.62
Hours of high school English	1	40	11.66	4.92
Composite ACT score	9	30	18.59	2.93
Mathematics ACT score	7	30	17.64	3.72
English ACT score	5	33	17.79	3.86
Science ACT score	5	32	17.82	4.01
Social Science ACT score	6	32	18.09	4.55
High school GPA	1.00	4.00	3.03	0.60
College cumulative GPA	1.00	4.00	2.84	0.56

From Table 2, number and hours of high school mathematics and English taken were consistent with the studies conducted by Barham (1992), Barham and Ogunyemi (1992, 1994), and Ikegulu (1996). The wide margins in the hours of high school mathematics and English were the consequences observed in high school curricula in foreign countries. The mean ACT composite and its component scores, as well as the high school and college cumulative GPAs were also consistent

with Ikegulu's (1996) study on the predictive indicators of academic performance in College Algebra for Post-Developmental students: ACT composite (Mean = 17.01, SD = 2.85), Mathematics (Mean = 16.23, SD = 4.32); English (Mean = 16.23, SD = 4.01), Science (Mean = 16.48, SD = 4.44), Social Science (Mean = 14.96, SD = 4.28), High school GPA (Mean = 2.57, SD = 0.50), and College GPA (Mean = 2.48, SD = 0.62). The mean ACT scores were slightly higher than those reported by Hashway, et al. (1994). They indicated that the mean composite ACT for their sample was 13.83 (SD = 5.80). The mean age for the respondents in this study was 21.89 years (SD = 4.53). the range was 30 years (47 minus 17), and the median age was 22 years. Boylan, Bonham, & Bliss (1992), in their National Study of the Performance of Minority Students in Developmental Education, reported the mean age for their subjects as 21.0 years and the range as 49 years (65 minus 16).

It has been conjectured that pre-college variables have significant impacts on students' academic achievement and persistence beyond the freshman year. The degree of impact of these academic indicators has not been fully studied. Advocates for the 'equal educational opportunity for all' claim that developmental education is a 'game of nix,' is not beneficial to the students and faculty alike, and will never enhance students' academic performance in higher education. As a preliminary investigation,

Table 3 offers comparisons of the gender and developmental status summary measures of the academically related indicator variables. The means (and standard deviation) from Table 3 did not show any significant differences in these academically related indicators by gender and developmental status. There are, however, minor variations in the means (especially for gender). This table also shows that developmentalism is not limited to older students. The slight variations in Table 3 were further reexamined using the item-response theory and correlation analyses.

The standard errors or SE (i.e. standard error of the mean [SEM] or standard error of estimate) are non-negative measures of the amount of bias in estimated parameters or sampling errors (caused by random fluctuations). The smaller the SE, the better the estimated parameter; and thus, the less the bias. Bias is the difference between the parameter and the SE. In item (or multiple-item) response theory, observed score is the sum of the true score and the error component from the estimation or sampling procedures. That is, $X(t_i) = T(t_i) - E(t_i)$; for all $i = 1, 2, 3, \ldots, 219$. Table 4 indicates that, for the indicators and their composites (factor-scales), the true scores are approximately equal to the observed scores because the standard errors are very close to zero. Thus, the indicator variables, in the long run, measured the population parameters of interest (in the case, the population

Table 3

Gender and Developmental Status Comparisons among the Academically Related Variables

Indicator Variables	Means and (Standard Deviation)	
	Gender	
	Male (N = 97)	Female (N = 122)
Students' Age	21.76 (4.47)	22.04 (4.54)
Number of high school Math	3.82 (1.16)	3.74 (1.14)
Number of high school English	3.94 (1/25)	3.93 (1.07)
Hours of high school Math	11.49 (4.61)	10.57 (4.59)
Hours of high school English	12.21 (5.08)	11.18 (4.75)
Composite ACT score	18.52 (2.85)	18.61 (3.00)
Mathematics ACT score	17.62 (3.61)	17.65 (3.82)
English ACT score	17.59 (3.68)	17.98 (4.02)
Science ACT score	17.74 (4.12)	17.86 (4.01)
Social Science ACT score	17.97 (4.53)	18.17 (4.64)
High school GPA	2.96 (0.60)	3.10 (0.59)
College cumulative GPA	2.78 (0.56)	2.90 (0.55)
	Developmental Status	
	Developmental (N = 188)	Non-Developmental (N = 31)
Students' Age	21.77 (4.28)	21.51 (4.42)
Number of high school Math	3.70 (1.06)	3.93 (1.21)
Number of high school English	3.89 (1.15)	3.96 (1.16)
Hours of high school Math	10.36 (4.30)	11.46 (4.79)
Hours of high school English	10.95 (4.76)	12.17 (4.99(
Composite ACT score	18.04 (2.92)	18.95 (2.89)
Mathematics ACT score	16.92 (3.58)	18.15 (3.67)
English ACT score	17.05 (3.91)	18.32 (3.75)
Science ACT score	17.29 (4.09)	18.17 (3.99)
Social Science ACT score	17.56 (4.63)	18.45 (4.52)
High school GPA	2.93 (0.60)	3.11 (0.58)
College cumulative GPA	2.78 (0.57)	2.89 (0.55)

means were accurately estimated and measured from the sample means). These results are as tabulated in Table 4. Furthermore, by the 'Law of Large Numbers' and the 'Central Limit Theorem:' (1) the limiting distribution of the sample means approach the normal distribution with centrality parameters (μ & $\sum^2$; where $\sum = S/\sqrt{N}$), (2) the limiting probability of the sum of these sample means as N approaches infinity equals the population mean, and (3) the limit that the expected value of the sample means being equal to the population mean is unity Almost Surely (a.s). That is, the long run (expected) values of these sample means ($\bar{X}_i$) is the population mean with probability one; and since $\bar{X}_i \sim N(\mu, \sum^2)$, then $X_i \sim N(\mu, \sigma^2)$; $\forall i$. Two implications of these are that the $\bar{X}_i$ are independently and identically distributed normal variates and, some of these indicators (i.e, X_i's) could be combined to form the composites. The strength of the linear combinations of the indicators as well as their composites and latent traits were then evaluated using correlation analyses.

Correlation Analysis

Correlation analyses were performed to determine the strength of the relationships among the dependent variables college cumulative GPA (CUMGPA) and students' (intentional) persistence (PERSIST), indicator variables and their composites, and the latent

Table 4

Label, Number of Indicators, Mean (SD), and SEM for the Latent Constructs (Factor-Scales) and their Composites

Scales/Composites	Label	N	Mean	(SD)	SEM
Students' Entry-Level Characteristics	SELC	9	6.78	(1.335)	0.035
Prerequisite Skills	PSK	4	6.72	(2.104)	0.054
Familial Influence on Students' Decision-Making	FAMIGOAL	10	2.06	(0.409)	0.011
Socioeconomic Status	SES	4	2.53	(0.783)	0.020
Family Support	FAMSUPP	3	2.07	(0.823)	0.016
Family Encouragement	FAMENC	3	1.57	(0.695)	0.018
Students' Ability/Style	SAS	9	10.19	(1.617)	0.042
Non-academic Activities	SNAA	5	1.89	(0.589)	0.015
Study Habits/Style	SSHS	4	2.40	(0.545)	0.014
Students' Aptitude	SAP	11	2.70	(0.479)	0.012
Academic Ability	SAA	5	17.98	(3.203)	0.083
Characteristics	SBC	5	6.83	(1.600)	0.041
Students' Co-integration	COINTGRA	16	2.67	(0.575)	0.015
Social integration	SOCINT	6	2.69	(0.829)	0.021
Academic Integration	ACAINT	5	2.46	(0.800)	0.021
Affiliation	AFFILI	5	2.87	(0.865)	0.022
Persistence	PERSIST	8	3.11	(0.988)	0.026
College Cumulative GPA	CUMGPA	1	2.84	(0.559)	0.014

Note.
Students' entry-level characteristics (SELC) did not include age, gender, and race in the computations; and these results are based on the factor analyses procedures.

traits: (1) students' students' prerequisite skills (PSK) and students' entry-level characteristics (SELC); (2) socioeconomic status (SES), family support (FAMSUPP), family encouragement (FAMENC), and familial influence on students' decision-making (FAMIGOAL); (3) students' non-academic activities (SNAA), students' study habits/style (SSHS), and students' ability and style (SAS); (4) students' academic ability (SAA), students' characteristics (SBC), and students' aptitude (SAP); and (5) social integration (SOCINT), academic integration (ACAINT), affiliation (AFFILI), and co-integration (COINTGRA). These are summarized in Tables 5 and 6.

From Table 5, the magnitudes of correlation associated with the composites formed by the academically (mostly the demographic indicators) related indicators are significant with college GPA. The composites are significant with PERSIST. Persistence is a consequence of attrition and retention behaviors in a population of interest. In addition to the first-order correlation between the composites of the indicators with college GPA and persistence in Table 5, Table 6 portrays the inter-correlations among the latent constructs, as well as high school and college GPAs. Consistent with the results obtained from Table 5, Table 6 amplified the suspicions that the summated scales used in the proposed model have different scaling -- orthogonal and bi-polar -- and, that the

Table 5

First-Order Correlation (r) of the Composites with CUMGPA and PERSIST

Composites	r with CUMGPA	r with PERSIST
Students' Prerequisite Skills	0.1288***	0.1281***
Socioeconomic Status	-0.0108	0.1281***
Family Support	-0.0476	0.1540***
Family Encouragement	0.0064	0.1310***
Students' Non-Academic Activities	0.1157***	0.1460***
Students' Study Habits and Style	-0.0202	0.1559***
Students' Academic Ability	0.1157***	0.2360***
Students' Academic Characteristics	0.1101***	0.1378***
Social Integration	0.1220	0.2322***
Academic Integration	-0.1869***	0.2293***
Affiliation	0.0932	0.2157***

Note.
CUMGPA = College cumulative GPA
PERSIST = Students (intentional) persistence
*** p-value < 0.001
** p-value < 0.01
* p-value < 0.05

combined responses from the IRT and MIRT formulations needed to be re-examined using the exploratory factor analyses procedures. A summated scale is an attitude scale or index made up of several

survey or questionnaire items.

A maximum likelihood factor analysis procedure (with a cut-off of 0.499) that used the composites was employed. Table 7 summarizes the results of this procedure and the reliability estimates. The scale alphas together with their measures of central tendency and the simple correlations indicate that the scales were adequate in predicting the parsimony and goodness-of-fit of the proposed model. The scree plot yielded a solution of six factors (χ^2 = 134.45, $p > 0.2$) with factor loadings ranging from 0.512 to 0.986, eigenvalues between 1.002 and 6.432, and accounted for 67.6% of the total variance.

The factor loading for students' entry-level characteristics was 0.463 (alpha = 0.275) when students' age, gender, and ethnicity were included in the model. With the exclusion of these indicators, the factor loading improved to 0.673 (alpha = 0.876). This is an indication that students' demographic information were not adequate in predicting students' intentional persistence. In addition, about 76.8% (or $(0.8762)^2$) and 62.2% (or $(0.7886)^2$)of the variances are explained by the six-factor model and the entire instrument respectively. Hence, the factor-based model is a parsimonious explanation of the students' intentional persistence in the sample and could be used to predict students' withdrawal and retention patterns in the population. This

model is as depicted in Figure 1.

Table 6

Intercorrelations among the Latent Traits, College Cumulative GPA, and Intentional Persistence

	1	2	3	4	5	6	7	8
Exogenous Variables								
SELC	1.0							
[1]								
FAMIGOAL	.053	1.0						
[2]	(*)							
Endogenous Variables								
SAS	-.028	.166	1.0					
[3]		(***)						
SAP	.038	.189	.501	1.0				
[4]		(***)	(***)					
COINTGRA	-.021	.084	.327	.377	1.0			
[5]		(***)	(***)	(***)				
HSCGPA	.059	.062	-.050	.292	.074	1.0		
[6]	(*)	(*)		(***)	(*)			
CUMGPA	.092	.076	-.028	-.042	.165	.467	1.0	
[7]	(***)	(**)		(*)	(***)	(***)		
PERSIST	-.048	.085	.164	.207	.118	.219	.234	1.0
[8]		(**)	(***)	(***)	(***)	(***)	(***)	

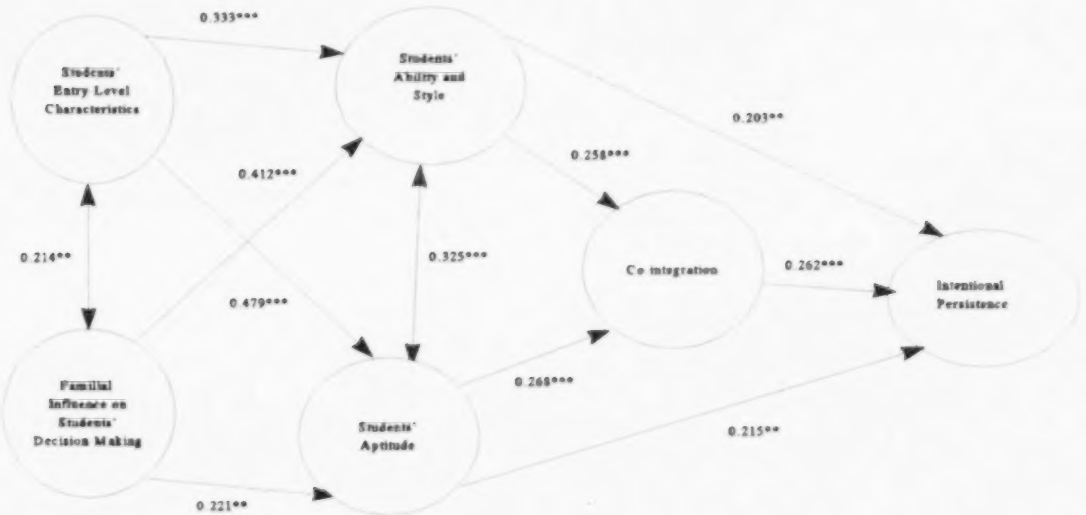
Note.
SELC = Students' entry-level characteristics.
SAS = Students' ability and style.
FAMIGOAL = Familial influence on students' decision-making.
SAP = Students' aptitude.
COINTGRA = Students' co-integration.
CUMGPA = Students' college cumulative GPA.
HSCGPA = High school GPA.
PERSIST = Students' (intentional) persistence.
Significant p-values are in parentheses.
*** p-value < 0.001, ** p-value < 0.01, and * p-value < 0.05.

Table 7

Factor Loadings and Alpha Reliabilities: Factor-Based Model

Scales/Composites	Factor Loadings	Scale Alpha
Students' Entry-Level Characteristics		(0.275)
Students' Background Characteristics	0.673	
Students' Prerequisite Skills	(0.463)	0.876
	0.784	
Familial Influence On Students' Decision-Making		0.121
Socieconome Status	0.512	
Family Support	0.989	
Family Encouragement	0.675	
Students' Ability and Style		0.545
Students' Non-Academic Activities	0.875	
Students' Study Habits/Style	0.763	
Students' Aptitude		0.898
Students' Academic Ability	0.986	
Students' Academic Characteristics	0.794	
Co-integration		0.788
Social Integration	0.621	
Academic Integration	0.863	
Affiliation	0.743	
Intentional Persistence	0.745	0.643
Overall (Six-Factor) Model		0.8762
Overall (IISIS) Instrument Alpha		0.7886

Results of the path analysis are consistent with the factor analysis as evidenced in the reliability estimates. Overall, about 67.6% and 68.1% (R^2 = 0.8252 for the full model) of the total variance in intentional persistence were explained by the factor



Note.
* $p < 0.05$; ** $p < 0.01$; and *** $p < 0.001$

Figure 1
Post-Developmental Students' Intentional Persistence Model I: A Path Diagram (Ikegulu, 1997)

and path analyses. These indicators were judged adequate for the type and scope of this investigation (Bean & Metzner, 1985; Hood, 1991; Ikegulu, 1996; Johnson, 1991; Okun, et al. 1990; Terenzini,

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et al, 1996).

From the path diagram (See Figure 1), two significant paths are evident: (1) the relevant instrumental path from students' entry-level characteristics through the students' ability/style to co-integration and students' intentional persistence; and (2) the supportive familial influence and students' academic aptitude path from familial influence on students' decision-making to students' aptitude through co-integration to students' intentional persistence. Collectively, both paths explained much of the variance in intentional persistence. The '<u>critical paths</u>' in this model are: the path from Students' entry-level characteristics to students' aptitude through co-integration to intentional persistence; and the path from familial influence on students' decision-making to students' ability/style through co-integration to intentional persistence.

Consistent with Figure 1, Table 8 is a summary of the decomposition of causal effects in the path diagram. The total effects are the sum of the direct and indirect effects of a particular causal link (path). This table was used to test the proposed hypotheses. These hypotheses are consistent with specific aims #1 and #3. To
reject any of these hypotheses would mean that few of its component parts were not satisfied. If any of these components were

Table 8

Decomposition of Causal Effects in the Path Model

Effects	Causal Effects		
	Direct	Indirect	Total
On Students' Ability/Style (SAS):			
Of Students' Entry-Level Characteristics (SELC)	0.333	0.000	0.333
Of Familial Influence on Students' Decision-Making (FAMIGOAL, through SELC)	0.412	0.971	0.483
Of SELC (Through FAMIGOAL)	0.333	0.088	0.421
On Students' Co-integration (COINTGRA):			
Of SAS (Through SAP)	0.258	0.087	0.345
Of SAP (Through SAS)	0.268	0.084	0.352
On Students' Intentional Persistence (PERSIST):			
Of Co-integration	0.262	0.00	0.262
Of SAS (Through COINTGRA)	0.203	0.068	0.271
Of SAP (Through COINTGRA)	0.215	0.070	0.285

Note.
1. SELC = Students' Entry-Level Characteristics
2. SAP = Students' Aptitude
3. SAS = Students' Ability/Style
4. FAMIGOAL = Familial Influence on Students' Decision-Making
5. COINTGRA = Students' Co-integration
6. PERSIST = Students' Intentional Persistence

satisfied, the hypotheses would be partially accepted/rejected. Acceptance of any of the hypotheses would mean that all of its components were satisfied.

H_{01}. **Students' entry-level characteristics and familial influence on students' decision-making were not interrelated; and both did not have direct effects on students' ability/style and aptitude.**

This hypothesis tested the interrelationship between students' entry-level characteristics (SELC) and familial influence on students' decision-making (FAMIGOAL), as well as their significant direct causal links to students' ability/style (SAS) and aptitude (SAP). From Figure 1 and Table 8, SELC and FAMIGOAL are correlated (r = 0.214, $p < 0.01$); and both have significant direct effects on SAS and SAP. Therefore, we failed to accept this hypothesis.

H_{02}. **Students' ability/style (SAS) and aptitude (SAP) are not interrelated; and both did not have direct effects on students' co-integration (COINTGRA) and intentional persistence (PERSIST).**

This is a two-part hypothesis that tested the collective effects of the inter-correlational and direct causal links of SAS and SAP on COINTGRA and PERSIST. First, students' ability/style has a significant (β = 0.258, $p < 0.001$) and students' aptitude has a

significant (β = 0.368, p < 0.001) causal links and marginally significant indirect effects on students' co-integration. Second, both students' ability/style and aptitude (i.e, SAS & SAP) have significant correlation ($\Phi = r$ = 0.325, p < 0.001). This hypothesis (H_{02}) was rejected.

H_{03}. **Students' co-integration is a mediating factor between students' intentional persistence and students' ability/style and aptitude; and is also antecedent to students' intentional persistence.**

The obvious significance of SELC and FAMIGOAL on SAS and SAP; and their marginally significant residual effects on students' co-integrability (COINTGRA) was a direct consequence of the importance of these constructs in this study. Students perceived the institutional effects as important factors in their academic integration, social integration, and affiliation within the parent institution. The composites associated with these constructs were significantly correlated with students' co-integration and intentional persistence.

In addition, the three endogenous constructs, SAS,(β = 0.203, p < 0.01); SAP,(β = 0.215, p < 0.01); and COINTGRA,(β = 0.262, p < 0.001) all have significant direct effects on students' intentional persistence. Hence, this hypothesis (H_{03}) was rejected.

Summary and Conclusion

It is important, in the context of risk estimates, to find unbiased measures, to account for the degree of congruence and homeostasis a student has with his or her parent institution. It is equally crucial, in the context of predicting students' academic achievement and retention, to broaden the scope to include cognitive and non-cognitive, instructional and institutional, and home environmental indicators that affect college students' learning outcomes and persistence behaviors.

Most studies found that academically related factors were significant in predicting students' persistence (Hill, 1987; Hood, 1991; Keith, et al., 1986; Ikegulu, 1996; Nettles, Thoney, Gosman, & Dandridge, 1987; Nora & Cabrera, 1996; Terenzini, et al., 1996). The studies that considered these pre-college variables as students' entry-level characteristics found high school GPA, college GPA, pre-college variables, and achievements test scores as significant factors in students' attrition and retention. The same conclusions were reached in the present investigation. Pre-college variables (number and hours of high school mathematics and English) and achievement test scores (ACT composites and components) were 'good' indicators for predicting students' persistence. This means that students who were academically prepared in high school could

score higher on their achievement tests and, the combination of strong high school curricula and better scores on ACT would foster the transition in college curricula and ease the adjustment from high school to college environments. These in turn, would promote institutional affiliation and co-integrability through strong family support and encouragement and institutional commitment. The consequences of these would result in reduced attrition and increased retention rates (Astin, 1993; Clark, 1983; Dial, 1987; Hill, 1987; Keith, et al, 1986; Nettles, et al. 1986, 1987; Nora & Cabrera, 1996). The present study demonstrated that students' entry-level characteristics were more evinced, in conjunction with students' ability/style and aptitude in shaping students' persistence behaviors in higher education.

Risk factors endemic within an institutional and instructional environments tend to endanger students' progress in a course, a department, or a college. They also have the tendency to result in voluntary and involuntary withdrawals predicated upon the students' ability to not only be socially integrated within these environments; but also be academically integrated and affiliated within the institutional community. Students are expected to embrace the institutional culture and be cognizant with the curricula offering and course scheduling (Pentages & Credon, 1978). The present investigation found that more than 50% of the sample

had the risk of repeated academic failures. This constituted the potential drop-outs, stop-outs, and transfers. A significant correlation ($\Phi = 0.325$, $p < 0.001$) was also found between the within institutional and instructional environments that are characterized by the students' on- and off-campus academic and non-academic activities.

Institutional environments are characterized by their size (large, medium, and small), type (PWCU and PBCU), and program-type (two-year and four-year). These institutions attract diverse students and tend to offer different curricula for different students. Within the institutional environments, diversity do exist in instructional emphases. Some institutions are funded on a per-credit hour basis; others manage their operating budgets based on students' enrollment. Because of these differences, institutions have different admission policies and governance. The consequences of these differences were the types of curricula offering made available to the students. In addition, most institutions tend to recruit their faculty members based on merits and qualifications, others attract readily available instructors without terminal degrees as adjuncts or non-tenured professors. (Boylan, Bonham, & Bliss, 1993; Ferguson, 1991; Kulik, Kulik, & Schwalb, 1983). What happens in most cases is that the students seeks to achieve and maintain congruence within the institutional environment and, the

institution tends to admit the student who is most likely to persist and maintain homeostasis within the instructional environment. Surprisingly, this ideal mix is never the case. Students', upon being admitted into an institution may transfer to another institution for reasons other than academic, personal, size and location of the institution, and/or institutional curricula (Bean & Metzner, 1985; Hood, 1991; Okun, et al., 1990). Observed institutional discrimination breeds nonchalance and students' incompatibility with the institutional staff/faculty tantamount to lack of commitment. Extracurricular activities (intramural or varsity sports, band, etc.) are yet another reason for these high transfer rates. Family's wish that students transfer could also be reasoned as one of the factors that resulted in the high transfer rate. In all cases, the quality of the relationships between a student and the institutional staff/faculty determines students' satisfaction with their parent institution. Positive faculty-student interactions facilitate academic and intellectual developments as well as social adjustment (Hood, 1991).

It seems evident that higher education is a necessity for all who seek it; and the completion of such educational training is vitally crucial to the fulfillment of their ultimate goal of employability. It is equally necessary that adult workers return to school; and that the quality of education they obtain upon

graduation will worth the efforts expended in such educational endeavors. Bean and Metzner (1985), Johnson (1991), and Okun, et al., (1990) argued that believing and understanding the need of adult learners seeking job specific training is the problem; and that this problem lies in retaining these learners long enough to teach them job-specific skills necessary for obtaining and maintaining employment or advancing in the workplace. nevertheless, some adult learners dropout of their training programs before acquiring sufficient skills for employment, advancement, or to maintain their present job (Johnson, 1991).

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APPENDICES

Appendix A - Letter to the Student

College of Science and Technology
Department of Mathematics & Computer Science
Grambling State University
Grambling, LA. 71245

Dear Student:

You are being asked to participate in this study on a voluntary basis. The data you provide will be used to improve and develop programs that contribute to at-risk or underprepared students' persistence. There are no right and wrong answers, your opinion is what we want. Your identity will be confidential and no one at your institution will be able to identify your answers with your name. Furthermore, this form will NOT be a part of your institutional record. All that is required of you is a good-faith effort in answering the questions. Please, do not leave any of the item unanswered. Thank you!

_____

My signature is evidence that I am willing for this information to be utilized in this research study as long as my identity remains anonymous. I understand that my name and social security number will be kept confidential by the researcher.

SS No.: _____

NAME: _____

Address: _____

_____

Phone #: ( ) _____--_____

Alternate Phone #: ( ) _____--_____

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Appendix A - Letter to the Student

College of Science and Technology
Department of Mathematics & Computer Science
Grambling State University
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_____

My signature is evidence that I am willing for this information to be utilized in this research study as long as my identity remains anonymous. I understand that my name and social security number will be kept confidential by the researcher.

SS No.:_____

NAME:_____

Address:_____

_____

Phone #: ( ) _____--_____

Alternate Phone #: ( ) _____--_____

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APPENDIX B

INSTITUTION-INSTRUCTOR-STUDENT INVENTORY SURVEY

Student's Background Information

1. My date of birth (DOB) is: ____/____/____(YR/MO/DY).

2. My ethnicity or race (check one only) is:

[ ] White (Non-Hispanic)
[ ] Black (Non-Hispanic)
[ ] Hispanic
[ ] Asian-American
[ ] Native-American
[ ] Others

3. My gender (SEX) is: [ ] Male [ ] Female

4. I live on campus: [ ] Yes [ ] No

5. I am in honors program: [ ] Yes [ ] No

6. I attended the institution's orientation program:

[ ] Yes [ ] No

7. I have decided on my academic major:

[ ] Yes
[ ] No
[ ] Undecided

8. My classification (check one only) is:

[ ] Freshman
[ ] Sophomore
[ ] Junior
[ ] Senior

9. My degree aspiration while attending this institution:

_____1) None
_____2) Associate degree (A.S. or A.A.)
_____3) Bachelors degree (B.S. or B.A.)
_____4) Masters degree (M.S. or M.A.)
_____5) Specialist or Certification
_____6) Ph.D., Ed.D., or professional degree

10. I have _____ dependent children:

_____1) None
_____2) 1
_____3) 2
_____4) 3
_____5) 4 or more

11. I am in _____ school activities (number of):
(e.g., band, orientation, sports, clubs, etc.)

_____1) None
_____2) 1 to 2 activities
_____3) 3 to 4 activities
_____4) 5 to 6 activities
_____5) 7 or more activities

12. I spend ___ number of hours weekly on school activities (e.g., band, theater, publications, professional clubs, etc.).

_____1) None
_____2) 1 to 2 hours
_____3) 3 to 5 hours
_____4) 6 to 8 hours
_____5) 9 or more hours

13. I am in _____ community activities (number of):
(e.g., Non-academic activities such as Church or socio-cultural events).

_____1) None
_____2) 1 to 2 activities
_____3) 3 to 4 activities
_____4) 5 to 6 activities
_____5) 7 or more activities

14. Social activities: Weekly number of hours spent (e.g., intramural sports, sororities, fraternities, social clubs, etc.)
_____1) None
_____2) 1 to 2 hours
_____3) 3 to 5 hours
_____4) 6 to 8 hours
_____5) 9 or more hours

15. Weekly number of hours spent watching T.V.:
_____1) None
_____2) 1 to 10 hours
_____3) 11 to 20 hours
_____4) 21 to 30 hours
_____5) 31 or more hours

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16. Weekly number of hours spent working on-campus:

_____1) None
_____2) 5 or less hours
_____3) 6 to 10 hours
_____4) 11 to 15 hours
_____5) 16 to 20 hours

17. Weekly number of hours spent studying (Study Time):

_____1) None
_____2) 1 to 20 hours
_____3) 21 to 40 hours
_____4) 41 to 60 hours
_____5) 61 or more hours

18. My annual financial aid award is:

_____1) None
_____2) $ 1,000 to $3,400
_____3) $ 3,500 to $5,400
_____4) $ 5,500 to $8,400
_____5) $ 8,500 to $10,400
_____6) $10,500 to $12,400
_____7) $12,500 and above

19. Weekly number of hours spent working off-campus:

_____1) None
_____2) 10 or less hours
_____3) 11 to 20 hours
_____4) 21 to 30 hours
_____5) 31 to 40 hours

Student's Family Information

Instruction: Family as used here means your immediate family members such as father, mother, Grand parents, step-parents in the same household.

20. Father's highest education level:

_____1) Some high school
_____2) High school graduate
_____3) Some college
_____4) Bachelors degree
_____5) Graduate/progressional school

21. Mother's highest education level:

_____1) Some high school
_____2) High school graduate
_____3) Some college
_____4) Bachelors degree
_____5) Graduate/progressional school

22. I am from a _____ family background (FAMBAGD):

_____1) Single family (One parent)
_____2) Two-family (Natural or birth parents)
_____3) Two-family (Adopted parents)
_____4) Two-family (One natural-parent and one step-parent)
_____5) Two-family (Grand parents, Aunt or Uncle and spouse, etc.)

23. There are ___ in my household (FAMSIZ) including you:

_____1) 2 or less people
_____2) 3 to 5 people
_____3) 6 to 8 people
_____4) 9 to 11 people
_____5) 12 or more people

Institutional Information

What are your experiences in this institution?

Please think about each statement and answer with the number of the response that **truly applies to you**, and not what you would like to be true or what you think others would want to hear. Think about each statement by itself. Write the number of the response which agrees with your attitude toward that statement in the blank before the statement. Thank you.

[1] - Almost always true

[2] - Often true

[3] - Generally true

[4] - Occasionally true

[5] - Almost never true

24._____ My family approves of my attending this institution.

25._____ My family encourages me to attend this institution.

26._____ My family encourages me to get a college degree.

25._____ I have the moral support of my family.

27._____ It is important to my family that I earn my baccalaureate degree..

28._____ I have observed racist word, comments, behaviors, or

gestures directed to minority students at this institution.

29._____ I feel there is a general atmosphere of racism among students in this institution.

30._____ I have heard negative words or comments about people of my own race or ethnicity in my classes.

31._____ I have encountered racism while attending this institution.

32._____ I have been singled out in class and treated differently than other students.

33._____ I feel there is a general atmosphere of racism among administrative staff in this institution.

34._____ I feel there is a general atmosphere of racism among faculty in this institution.

35._____ My nonclassroom interactions with faculty and staff have had a positive influence on my personal growth, values, and attitudes.

36._____ My nonclassroom interactions with faculty and staff have had a positive influence on my intellectual growth and interest in ideas.

37._____ My nonclassroom interactions with faculty and staff have had a positive influence on my career goals and aspirations.

38._____ My nonclassroom interactions with faculty have had a positive influence on my academic growth and aptitudes.

39._____ Since coming to this institution I have developed a close, personal relationship with at least one academic faculty or staff member at this institution.

40._____ I am satisfied with the opportunities to meet and interact informally with academic faculty and staff members in this institution.

41._____ Most of the faculty members I have had contact with are generally interested in students.

42._____ Most of the faculty members I have had contact with are generally outstanding or superior teachers.

43._____ Most of the faculty members I have had contact with

are willing to spend time outside of class to discuss issues of interest and importance to students.

44._____ Most of the faculty I have had contact with are interested in helping students grow in more than just academic areas.

45._____ Most faculty members I have had contact with are generally interested in teaching.

46._____ Academic advisors or counselors at this institution are generally concerned about students.

47._____ Since enrolling to this institution I have developed close personal relationships with other students.

48._____ The student friendships I have developed at this institution have been personally satisfying.

49._____ My interpersonal relationships with other students have had a positive influence on my personal growth, attitudes, and values.

50._____ My interpersonal relationships with other students have had a positive influence on my intellectual growth and interest in ideas.

51._____ It has been difficult for me to meet and make friends with other students at this institution.

52._____ Quite a few of the students I know at this institution would be willing to listen to me and help me if I had a personal problem.

53._____ Most students at this institution have values and attitudes different from my own.

54._____ I spend more time socializing with friends at the Student Union or other campus buildings more often than I was before enrolling in this institution .

55._____ I am satisfied with the extent of my social life since enrolling in this institution.

56._____ Since enrolling in this institution, I have made friends with students quite different from me (e.g., different race or ethnicity, family background, religious beliefs).

57._____ I am satisfied with the extent of my intellectual development since enrolling in this institution.

58._____ My academic experience has had a positive influence on my intellectual growth and interest in ideas.

59._____ I am satisfied with my academic experience at this institution.

60._____ Few of my courses this year have been intellectually stimulating.

61._____ My interests in ideas and intellectual matters have increased since enrolling in this institution.

62._____ I am more likely to attend a cultural event (e.g., a concert, lecture, or art show) now than I was before coming to this institution.

63._____ I have performed academically as well as I anticipated I would.

64._____ I am confident that I made the right decision in choosing to attend this institution.

65._____ It is likely that I will register at this institution next semester.

66._____ I feel I belong at this institution.

67._____ It is important for me to graduate from this institution.

68._____ It is important for me to graduate from college.

69._____ I have no idea at all what I want to major in.

70._____ It is important for me to complete my program of study.

71._____ Getting good grades is not important to me.

Instructional and Curricula Information

72._____ The philosophy of this institution has both academic and curricula emphases.

73._____ Most of my instructors are of same race with me.

74._____ Most of my instructors are of same gender with me.

75._____ Most of my instructors seem to be qualified for the classes they teach.

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76._____ Most of my classmates are of same race with me.

77._____ Most of my instructors determine goals based on the curriculum as enumerated in the course syllabi.

78._____ Most of my instructors break down curriculum goals into learning tasks based on the course syllabi.

79._____ Most of my instructors find out the needs, background, abilities, and attitudes of the students by entertaining questions during and after lectures.

80._____ Most of my instructors deliver their lecture in segmented topics based on the syllabi and recommended texts.

81._____ Most of my instructors make a checklist for selecting appropriate materials for each lesson from the recommended textbooks and syllabi.

82._____ Most of my instructors determine the minimum skills that are required of the students to in order to complete the lesson through weekly assignments and quizzes.

83._____ Most of my instructors make sure that lessons and topics fit the entire lecture and curriculum as outlined in the course syllabi.

84._____ I believe my instructors discuss lesson objectives with other faculty members in this institution.

85._____ I believe my instructors ensure that their planned lessons will be appealing to the students.

86._____ My instructors make sure their lessons and topics relate to each other as outlined in the course syllabi.

87._____ I believe that my instructors try to accommodate the student's abilities in their lectures or teaching methods.

88._____ I believe that my instructors have contacts with other instructors teaching the same course in this institution.

89._____ I have taken some classes with a particular instructor because of his or her race.

90._____ I have taken some classes with a particular instructor because of his or her gender.

91._____ I have taken some classes with a particular instructor because of his or her teaching method.

92._____ I have taken some classes with a particular instructor because of his or her fairness in grading.

93._____ I like most of my instructors in this institution.

94._____ Most of my instructors write test items to measure students' understanding and performance.

95._____ Most of my instructors include motivating activities to gain students attention.

96._____ Most of my instructors specify for the students what they should be able to do or master at the end of each lesson or lecture.

97._____ I believe most of my instructors use and apply teaching methods that are based on learning theories.

98._____ Most of my instructors select and sequence objectives that would be taught during a single lesson as outlined in the course syllabi.

99._____ Most of my instructors organize the content of each lesson around related themes of knowledge and skills of the students base on heir previous performance.

100._____ I believe most of my instructors make assessments of their students during each lesson or lecture as a way of checking their teaching strategies.

101._____ Most of my instructors distribute the course syllabi and lesson plan for their courses during the first week of class.

102._____ I believe most of my instructors discuss lesson objectives with their department heads.

103._____ I believe most of my instructors discuss lesson plans and syllabi with other resource persons in this institution (e.g., Learning Center Specialists, Media Specialists, etc.).

104._____ I believe most of my instructors discuss and corroborate with other instructors and resource persons while organizing the course syllabi and lesson plans.

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